

To: Examiner Chakrabarti  
From: Ruth E. Tyler-Cross  
Re: US Patent Application 09/870,986  
Interview scheduled for July 8, 2002 at 1:00 PM

FACSIMILE: 703-746-4979

**PROPOSED TOPICS FOR DISCUSSION**

**1. Problem solved by the present invention and mechanism of action of the present invention.**

Examiner's statement: "features on which Applicant relies (i.e. no extrinsic tagging or labeling of the molecules which undergo binding is necessary in order to detect bound molecules and first layer and second layer of the claimed invention are separate) are not recited in the rejected claim(s)"

**Proposed amendment:**

Claim 1. A tagging-free method to detect the binding of an unlabeled single stranded nucleic acid sequence to an unlabeled material of interest [molecules], comprising the steps of:

(A) providing a sensor comprised of a first layer and a second layer wherein said first layer comprises [a] an unlabeled single stranded nucleic acid sequence and wherein said second layer comprises a photoluminescent material, and wherein said first layer and said second layer are separate layers;

(B) exposing said sensor to a biological sample for sufficient time for said unlabeled single stranded nucleic acid sequence to bind to [a] an unlabeled material of interest in said biological sample;

(C) applying light to said sensor; and

(D) measuring photoluminescence from said sensor, wherein photoluminescence measured in said step of exposing is indicative of binding of [molecules] said unlabeled single stranded nucleic acid sequence to said unlabeled material of interest .

2 pages  
total

## 2. References cited by Examiner

a.. Leland et al. requires tagging, and a "plurality of inanimate particles"

b. Charra provides an improved in electrooptical *transducer*, i.e.

1) "A device for converting the energy of one transmission system into the energy of another transmission system" (New Webster's Dictionary;) and

2) "convert[s] a quantity to be measured (e.g. chemical, mechanical or electromagnetic quantity) into a quantity directly usable by the data processing unit of such systems, i.e. an electrical or optical quantity." (second paragraph of Charra background)

## 3. Clarification of Examiner's "combination".

## 4. "Combination" of Leland et al. and Charra:

1) What is the motivation to "save energy" in fluorescent molecular binding assays?

2) What is the motivation to use an improved transducer as taught by Charra in the plurality of inanimate particles of Leland et al.?